

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1 1. (Currently Amended) A network routing apparatus, comprising:
2 a plurality of routing units each connected to at least one line, wherein each of
3 said plurality of routing units receives a packet from a line, extracts output destination
4 information using a packet header included in the packet received, and routes the received packet
5 in accordance with the output destination information; and
6 a switching unit connected to each of said plurality of routing units, wherein said
7 switching unit receives from each of said routing units a packet and the output destination
8 information, and in accordance with the output destination information, transfers the packet
9 received, to any one of said plurality of routing units;
10 each of said routing units further comprising:
11 one or a plurality of transfer means comprising a plurality of input and
12 output terminals, each connected to at least one line, wherein said plurality of transfer
13 means each extracts and outputs a packet header of the packet received from each line;
14 one or a plurality of search means comprising a plurality of input and
15 output terminals, each connected to each of said plurality of transfer means via said
16 plurality of input and output terminals, wherein said plurality of search means each
17 receive the packet header from each of said plurality of transfer means, extract the output
18 destination information by use of the packet header, and output the output destination
19 information; and
20 one or a plurality of switch input [[/]] and output means each for receiving
21 the received packet and the output destination information and transmitting the received
22 packet to said switching unit or each of said plurality of transfer means in accordance
23 with the output destination information;

24 wherein, in each said routing unit, one or said plurality of search means are each
25 connected to one or said plurality of transfer means; and

26 wherein a connection configuration determines the number of input and output
27 terminals between the transfer means and the search means; and

28 wherein a data size transferred between the search means and the transfer means
29 is configurable based on the connection configuration.

1 2. (Original) The network routing apparatus according to claim 1,
2 comprising as said routing unit:

3 a first routing unit in which one of said search means is connected to one of said
4 transfer means,

5 a second routing unit in which said plurality of transfer means are connected to
6 one of said search means,

7 a third routing unit in which said plurality of search means are connected to one
8 of said transfer means, or

9 a fourth routing unit in which said plurality of transfer means and said plurality of
10 search means are connected to one another.

1 3. (Original) The network routing apparatus according to claim 1,
2 comprising as said routing units:

3 a first routing unit in which said plurality of search means are connected to one of
4 said transfer means, or

5 a second routing unit in which said plurality of transfer means and said plurality
6 of search means are connected to one another,

7 wherein, in said first or second routing unit, said plurality of transfer means each
8 output the packet header to said plurality of connected search means.

1 4. (Original) The network routing apparatus according to claim 1,
2 comprising as said routing unit:
3 a first routing unit in which said plurality of transfer means are connected to one
4 of said search means, or
5 a second routing unit in which said plurality of transfer means and said plurality
6 of search means are connected to one another,
7 wherein, in said first or second routing unit, said plurality of transfer means each
8 output the output destination information to one of said transfer means to which the packet
9 header was output.

1 5. (Currently Amended) ~~The network routing apparatus according to claim~~
2 ~~2, wherein:~~ A network routing apparatus, comprising:
3 a plurality of routing units each connected to at least one line, wherein each of
4 said plurality of routing units receives a packet from a line, extracts output destination
5 information using a packet header included in the packet received, and routes the received packet
6 in accordance with the output destination information; and
7 a switching unit connected to each of said plurality of routing units, wherein said
8 switching unit receives from each of said routing units a packet and the output destination
9 information, and in accordance with the output destination information, transfers the packet
10 received, to any one of said plurality of routing units;
11 each of said routing units further comprising:
12 one or a plurality of transfer means comprising a plurality of input and
13 output terminals, each connected to at least one line, wherein said plurality of transfer
14 means each extract and output a packet header of the packet received from each line;
15 one or a plurality of search means comprising a plurality of input and
16 output terminals, each connected to each of said plurality of transfer means via said
17 plurality of input and output terminals, wherein said plurality of search means each
18 receive the packet header from each of said plurality of transfer means, extract the output

destination information by use of the packet header, and output the output destination information.; and

one or a plurality of switch input and output means each for receiving the received packet and the output destination information and transmitting the received packet to said switching unit or each of said plurality of transfer means in accordance with the output destination information;

wherein, in each said routing unit, one or said plurality of search means are each connected to one or said plurality of transfer means,

wherein a connection configuration determines the number of input and output terminals between the transfer means and the search means,

wherein a data size transferred between the search means and the transfer means is configurable based on the connection configuration,

said routing apparatus comprising one of:

a first routing unit in which one of said search means is connected to one of said transfer means,

a second routing unit in which said plurality of transfer means are connected to one of said search means,

a third routing unit in which said plurality of search means are connected to one of said transfer means, or

a fourth routing unit in which said plurality of transfer means and said plurality of search means are connected to one another,

wherein said transfer means and said search means both comprise an "n" number of input [L/]and output terminals ("n": natural number equal to or greater than 2);

in said first routing unit, said transfer means and said search means are connected using said "n" number of input [L/]and output terminals;

in said second or fourth routing unit, when an "i" number of said search means are connected to said transfer means ("i": natural number equal to or greater than 2), said transfer means and said "i" number of search means are each connected using respectively an "n/i" number of input [L/]and output terminals; and

in said third or fourth routing unit, when a "j" number of said transfer means are connected to said search means ("j": natural number equal to or greater than 2), said search means and said "j" number of transfer means are each connected using an "n/j" number of input and output terminals.

6. (Currently Amended) ~~The network routing apparatus according to claim 2,~~ wherein: A network routing apparatus, comprising:
a plurality of routing units each connected to at least one line, wherein each of said plurality of routing units receives a packet from a line, extracts output destination information using a packet header included in the packet received, and routes the received packet in accordance with the output destination information; and
a switching unit connected to each of said plurality of routing units, wherein said switching unit receives from each of said routing units a packet and the output destination information, and in accordance with the output destination information, transfers the packet received, to any one of said plurality of routing units;
each of said routing units further comprising:
one or a plurality of transfer means comprising a plurality of input and output terminals, each connected to at least one line, wherein said plurality of transfer means each extract and output a packet header of the packet received from each line;
one or a plurality of search means comprising a plurality of input and output terminals, each connected to each of said plurality of transfer means via said plurality of input and output terminals, wherein said plurality of search means each receive the packet header from each of said plurality of transfer means, extract the output destination information by use of the packet header, and output the output destination information.; and
one or a plurality of switch input and output means each for receiving the received packet and the output destination information and transmitting the received packet to said switching unit or each of said plurality of transfer means in accordance with the output destination information;

25 wherein, in each said routing unit, one or said plurality of search means are each
26 connected to one or said plurality of transfer means,

27 wherein a connection configuration determines the number of input and output
28 terminals between the transfer means and the search means,

29 wherein a data size transferred between the search means and the transfer means
30 is configurable based on the connection configuration,

31 said routing apparatus comprising one of:
32 a first routing unit in which one of said search means is connected to one
33 of said transfer means,

34 a second routing unit in which said plurality of transfer means are
35 connected to one of said search means,

36 a third routing unit in which said plurality of search means are connected
37 to one of said transfer means, or

38 a fourth routing unit in which said plurality of transfer means and said
39 plurality of search means are connected to one another,

40 in said first routing unit, said transfer means and said search means both transmit
41 [[/]]and receive the packet header or the output destination information, in increments of a
42 maximum of "n" bits ("n": natural number equal to or greater than 2);

43 in said second or fourth routing unit, when an "i" number of said search means are
44 connected to said transfer means ("i": natural number equal to or greater than 2), said transfer
45 means and said "i" number of search means each transmit [[/]]and receive the packet header or
46 the output destination information, in increments of a maximum of "n/i" bits; and

47 in said third or fourth routing unit, when a "j" number of said transfer means are
48 connected to said search means ("j": natural number equal to or greater than 2), said search
49 means and said "j" number of transfer means each transmit [[/]]and receive the packet header or
50 the output destination information, in increments of a maximum of "n/j" bits.

1 7. (Original) The network routing apparatus according to claim 1, wherein
2 said transfer means further comprises:
3 a retaining means that retains connection information for identifying the number
4 of said search means connected to said transfer means; and
5 an output means that outputs the packet header to each of said search means, in bit
6 increments associated with the connection information.

1 8. (Original) The network routing apparatus according to claim 1, wherein
2 said search means further comprises:
3 a retaining means that retains connection information for identifying the number
4 of said transfer means connected to said search means; and
5 an output means that outputs the output destination information, in bit increments
6 associated with the connection information, to said transfer means.

1 9. (Original) The network routing apparatus according to claim 8,
2 wherein said search means further comprises a second retaining means that retains
3 identification information for identifying said transfer means;
4 wherein said output means outputs the output destination information to said
5 transfer means identified by the identification information.

1 10. (Currently Amended) A network routing apparatus, comprising:
2 a plurality of routing units each connected to at least one line, wherein each of
3 said plurality of routing units routes the packet received from each line;
4 and a switching means connected to each of said plurality of routing units,
5 wherein said switching means transfers, to any one of said plurality of routing units, the packet
6 received from each of said routing units;
7 each of said routing units further comprising:
8 one or a plurality of transfer means comprising a plurality of input and output
9 terminals, each connected to at least one of the lines, wherein said plurality of transfer means

each extract and output a packet header of the packet received from each line; and
one or a plurality of search means comprising a plurality of input and output terminals, each connected to each of said plurality of transfer means, wherein said plurality of search means each receive the packet header from each of said plurality of transfer means, extract output destination information using the packet header, and output the output destination information;
wherein each of said routing units is either
a first routing unit in which one of said search means is connected to one of said transfer means using the said plurality of input and output terminals,
a second routing unit in which said plurality of transfer means are connected to one of said search means using the said plurality of input and output terminals,
a third routing unit in which said plurality of search means are connected to one of said transfer means using the said plurality of input and output terminals, or
a fourth routing unit in which said plurality of transfer means and said plurality of search means are connected to one another using the said plurality of input and output terminals,
wherein a connection configuration determines the number of input and output terminals between the transfer means and the search means,
wherein a data size transferred between the search means and the transfer means is configurable based on the connection configuration.

11. (Currently amended) A routing unit used in a routing apparatus which is connected to a plurality of lines to route the packet received from each line, said routing unit comprising:
one or a plurality of transfer means comprising a plurality of input and output terminals, each connected to at least one line, wherein said plurality of transfer means each receive a packet from a line, extract a packet header of the packet received, and output the packet header; and

one or a plurality of search means comprising a plurality of input and output terminals, each connected to each of said transfer means, wherein said plurality of search means each receive the packet header, extract output destination information using the packet header, and output the output destination information;

wherein one or said plurality of search means are connected to each of said plurality of transfer means using the said plurality of input and output terminals, and one or said plurality of transfer means are connected to each of said plurality of search means using the said plurality of input and output terminals,

wherein a connection configuration determines the number of input and output terminals between the transfer means and the search means,

wherein a data size transferred between the search means and the transfer means is configurable based on the connection configuration.

12. (Original) The routing unit according to claim 11,
wherein said plurality of search means are connected only to one of said plurality of transfer means or said plurality of transfer means are connected to said plurality of search means; and

wherein said plurality of transfer means each output the packet header to said plurality of connected search means.

13. (Original) The routing unit according to claim 11,
wherein said plurality of transfer means are connected only to one of said plurality of search means or said plurality of search means are connected to said plurality of transfer means; and

wherein said plurality of search means each output the output destination information only to said transfer means that has output the packet header.

1 14. (Currently Amended) ~~The routing unit according to claim 11, wherein: A~~
2 routing unit used in a routing apparatus which is connected to a plurality of lines to route the
3 packet received from each line, said routing unit comprising:
4 one or a plurality of transfer means comprising a plurality of input and output
5 terminals, each connected to at least one line, wherein said plurality of transfer means each
6 receive a packet from a line, extract a packet header of the packet received, and output the packet
7 header; and
8 one or a plurality of search means comprising a plurality of input and output
9 terminals, each connected to each of said transfer means, wherein said plurality of search means
10 each receive the packet header, extract output destination information using the packet header,
11 and output the output destination information,
12 wherein one or said plurality of search means are connected to each of said
13 plurality of transfer means using the said plurality of input and output terminals, and one or said
14 plurality of transfer means are connected to each of said plurality of search means using the said
15 plurality of input and output terminals,
16 wherein a connection configuration determines the number of input and output
17 terminals between the transfer means and the search means,
18 wherein a data size transferred between the search means and the transfer means
19 is configurable based on the connection configuration,
20 said plurality of transfer means and said plurality of search means each comprise
21 an "n" number of input ~~[[1]]~~and output terminals ("n": natural number equal to or greater than 2);
22 when one of said transfer means and one of said search means are connected to
23 each other, both means are connected using said "n" number of input ~~[[1]]~~and output terminals;
24 when an "i" number of said search means are connected to one of said transfer
25 means ("i": natural number equal to or greater than 2), said transfer means and said "i" number of
26 search means each is connected using an "n/i" number of input ~~[[1]]~~and output terminals; and
27 when a "j" number of said transfer means are connected to one of said search
28 means ("j": natural number equal to or greater than 2), said search means and said "j" number of

transfer means each being connected using respectively an "n/j" number of input [I/J] and output terminals.

15. (Currently Amended) ~~The routing unit according to claim 11, wherein:~~
routing unit used in a routing apparatus which is connected to a plurality of lines to route the packet received from each line, said routing unit comprising:
one or a plurality of transfer means comprising a plurality of input and output terminals, each connected to at least one line, wherein said plurality of transfer means each receive a packet from a line, extract a packet header of the packet received, and output the packet header; and
one or a plurality of search means comprising a plurality of input and output terminals, each connected to each of said transfer means, wherein said plurality of search means each receive the packet header, extract output destination information using the packet header, and output the output destination information,
wherein one or said plurality of search means are connected to each of said plurality of transfer means using the said plurality of input and output terminals, and one or said plurality of transfer means are connected to each of said plurality of search means using the said plurality of input and output terminals,
wherein a connection configuration determines the number of input and output terminals between the transfer means and the search means,
wherein a data size transferred between the search means and the transfer means is configurable based on the connection configuration,
when one of said transfer means and one of said search means are connected to each other, said transfer means and said search means both transmit [I/J] and receive the packet header or the output destination information, in increments of a maximum of "n" bits ("n": natural number equal to or greater than 2);
when an "i" number of said search means are connected to one of said transfer means ("i": natural number equal to or greater than 2), said transfer means and said "i" number of

26 search means each transmit [[/]]and receive the packet header or the output destination
27 information, in increments of a maximum of "n/i" bits; and
28 when a "j" number of said transfer means are connected to one of said search
29 means ("j": natural number equal to or greater than 2), said search means and said "j" number of
30 transfer means each transmit [[/]]and receive the packet header or the output destination
31 information, in increments of a maximum of "n/j" bits.

1 16. (Original) The routing unit according to claim 11, wherein said transfer
2 means further comprises:

3 a retaining means that retains connection information for identifying the number
4 of said search means connected to said transfer means; and
5 an output means that outputs the packet header information, in bit increments
6 associated with the connection information, to said search means.

1 17. (Original) The network routing apparatus according to claim 11, wherein
2 said search means further comprises:

3 a retaining means that retains identification information for identifying the
4 number of said transfer means connected to said search means; and
5 an output means that outputs the output destination information, in bit increments
6 associated with the connection information, to said transfer means.

1 18. (Original) The routing unit according to claim 17, wherein said transfer
2 means further comprises:

3 a second retaining means that retains identification information for identifying
4 said transfer means,
5 wherein said output means outputs the output destination information to said
6 transfer means to be identified by the identification information.